1. (Canceled) An apparatus for generating a droplet target comprising at least one receptacle for receiving a target liquid in which high pressure is realized by a non-reactive gas, an electromagnetic valve switching in the ms range connected with the receptacle, and a nozzle,

characterized by the fact that

the nozzle is structured as a supersonic nozzle (4);

that the valve (1) is connected to the supersonic nozzle (4) by way of an expansion channel (2);

heating means (3) formed around the expansion channel (2) such that the temperature can be set at a level at which a supersaturated vapor is formed in the expansion channel (2); und

an insulation (5) is provided between the electromagnetic valve and (1) and the heating means (3).

2. (Canceled) The apparatus in accordance with claim 1, characterized by the fact that

the pulsed electromagnetic valve (1) operates at a pulse duration of 2 ms.

3. (Canceled) The apparatus in accordance with claim 1, characterized by the fact that

the length of the expansion channel (2) is from several mm to several 10 mm and that its diameter is from several 100 µm to a range of mm.

4. (Canceled) The apparatus in accordance with claim 1, characterized by the fact that

the supersonic nozzle (4) has a conical opening angle 2Θ of several degrees to several 10 degrees, an input opening of a diameter of several 100 µm and a conically shaped section of a length of several mm.

5. (Canceled) A method of generating a droplet target, comprising the method steps of:

- filling a target liquid into a receptacle in which a high pressure is

realized by a non-reactive gas;

- brief opening of the receptacle by a pulsed electromagnetic valve;
- pulsed feeding of the target liquid into an expansion channel;
- heating the expansion channel such that a supersaturated liquid vapor is generated;
- cooling the gas during its passage to a supersonic nozzle connected to the expansion channel; and
- discharging liquid droplets through the discharge opening of the nozzle.

6. (Canceled) The method in accordance with claim 5, in which a pulsed electromagnetic valve with a pulse duration in the ms range, in particular 2 ms, is used.

7. (Canceled) The method in accordance with claim 5, in which an expansion channel of a length of from several mm to several 10 mm and a diameter of from several 100 m to the range of mm is used.

8. (Canceled) The method in accordance with claim 5, in which a supersonic with a conical opening angle 2Θ of several degrees to several 10 degrees, an input opening of a diameter of several 100 µm and a conically shaped section of a length of several mm is used.

9. (New) An apparatus for generating a droplet target, comprising:

at least one receptacle for receiving a target liquid and adapted to have its interior maintained under high pressure;

an electromagnetic valve switching between open and closed states by pulses in the range of ms;

means for feeding target liquid to the valve from the receptacle;

a supersonic nozzle;

an expansion channel for feeding target liquid from the valve to the

nozzle;

heating means associated with the expansion channel for converting target liquid therein to supersaturated vapor by a predetermined temperature; and

insulating means between the electromagnetic valve and the heating means.

10. (New) The apparatus of claim 9, wherein the pressure is maintained by a non-reactive gas.

11. (New) The apparatus of claim 10, wherein the non-reactive gas is nitrogen.

12. (New) The apparatus of claim 9, wherein the predetermined temperature is about 150 °C.

13. (New) The apparatus of claim 9, wherein the duration of the pulses is 2 ms.

14. (New) The apparatus of claim 9, wherein the expansion channel is of a length from between several mm and several 10 mm and of a diameter of from several 100 µm into the range of mm.

15. (New) The apparatus of claim 14, wherein the length is 15 mm and the diameter is 1 mm.

16. (New) The apparatus of claim 9, wherein the supersonic nozzle is provided with a conical opening angle $2\Theta$ of from several degrees to several 10 degrees, an input opening of several 100 µm diameter and a conically shaped section of a length of several mm.

17. (New) The apparatus of claim 16, wherein the opening angle is 7°, the

diameter is 500 μm and the length of the conically shaped section is 8 mm.

18. (New) A method of making a droplet target, comprising the steps of:

filling a receptacle with a target liquid;

maintaining a predetermined pressure within the receptacle;

briefly opening the receptacle by means of a pulsed electromagnetic valve;

feeding the target liquid through the electromagnetic valve into an expansion channel;

heating the expansion channel to a temperature sufficient to convert the target liquid into a supersaturated vapor;

feeding the supersaturated to a supersonic nozzle;

cooling the supersaturated vapor passing to the nozzle to condense to droplets; and

discharging the droplets from the nozzle.

19. (New) The method of claim 18 wherein the pressure is maintained by gaseous nitrogen at 35 bar and the valve is pulsed at 2 ms.

20. (New) The method of claim 18, wherein the supersaturated vapor is fed to an expansion channel of a length of from several mm to several 10 mm and a diameter of from several 100 μm to the range of mm.

21. (New) The method of claim 18, wherein the supersaturated vapor is fed into and is cooled in a supersonic nozzle having a conical opening angle $2\Theta$ of from several degrees to several 10 degrees and a conically shaped section of a length of several mm.